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Bulletin of the
Society for the Promotion of Engineering Education

VOL. XI LANCASTER, PA., MAY AND JUNE, 1921 NOS. 9 AND 10

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OF THE
Society for the Promotion of Engineering Education

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Arthur M. Greene, Jr., Mortimer E. Cooley, F. L. Bishop, *Editor.*
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VOL. XI LANCASTER, PA., MAY AND JUNE, 1921 NOS. 9 AND 10

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FOREWORD.

The Printers' strike, which covers to a greater or lesser extent the whole of the United States, made it impossible for our regular publishers to print the May and June Bulletins. In view of this the Publication Committee agreed to issue these two numbers as one and this number to contain an article, "The Place of Engineering at Yale," the final program of the annual meeting, and information concerning the meeting. This number is being printed in Pittsburgh and distributed not only to members of the Society, but to other teachers of engineering who might be interested in attending the annual meeting.

The program for this meeting has been prepared largely by the Local Committee at Yale headed by Professor J. C. Tracy. The Program Committee takes this opportunity of expressing its thanks and appreciation for the very excellent work which has been done in this and other matters by the Local Committee at Yale.

The co-operation of our advertisers has made possible this number of Engineering Education.

THE PLACE OF ENGINEERING AT YALE

Richard S. Kirby, Assistant Professor of Drawing and Descriptive Geometry, Yale University

The Sheffield Scientific School

The Sheffield Scientific School of Yale University was established in 1847 as the Department of Philosophy and the Arts of Yale College. It was named for Joseph E. Sheffield of New Haven, an early friend and benefactor of the School. The Scientific School is an integral part of the University, and its particular function is now defined as that of the "University's under-graduate school for professional study in Science and Engineering." It is one of the nine schools of the University, the others being Yale College, the Graduate School, the Divinity School and the Schools of Medicine, Law, the Fine Arts, Music, and Forestry.

The School has from the beginning emphasized instruction in Engineering and in Chemistry. The courses of study now offered are:

Civil Engineering
Mechanical Engineering
Electrical Engineering
Administrative Engineering
Mining
Metallurgy
Industrial and Engineering Chemistry
Chemistry
Pre-Medical Studies (two courses)
Physiological Chemistry and Bacteriology
Zoology and Botany
Pre-Forestry Studies (two courses)
Science as Applied to Industry

Its undergraduate body has grown up side by side with that of Yale College, which it has nearly equalled in numbers. As a result of certain readjustments in curriculum and organization, the enrollment has been for several years below the normal figure, which had nearly reached 1,200. Considerably over half of the students are in the engineering courses or in courses closely related to Engineering. Dormitory accommodations are provided, in general, for Freshmen and Sophomores. Some of the upper classmen room in fraternity dormitories. Both student government and the honor system have been in successful operation for a number of years throughout the School.

The total number of graduates from the Sheffield Scientific School has been over 7,000; of these more than half were graduated from the various engineering courses. The total number of graduates now living is nearly 6,500; about one-half are engaged in Engineering and allied pursuits.

Engineering Courses

Engineering has been taught in the Sheffield Scientific School of Yale University since 1853. Civil Engineering courses have been given for some 70 years; Mining for 55 years; Mechanical Engineering for 50 years; and Electrical Engineering for 20 years. The courses in Administrative Engineering and in Industrial and Engineering Chemistry are recent developments.

The courses in Engineering are now four years in length and lead to the B. S. degree. The first two years are substantially common, and include only the fundamental subjects. Some common subjects are given in Junior year, and therefore most of the distinctive course subjects are deferred until Senior year. The main object of the undergraduate courses is to train the student in the broad underlying principles of Engineering.

The engineering faculty numbers 23 professors and assistant professors and some 30 instructors and assistants. About two-thirds of the total number are graduates of our own courses.

The first system of graduate studies in the United States dates from the founding of what is now the Sheffield Scientific School. Graduate instruction and research in pure and applied science has always been considered an important part of the work of the school. The graduate courses in Engineering are now under the jurisdiction of the Graduate School. Special lecture and conference courses, some twelve in number, are given to graduate students in Engineering by widely known engineering specialists regularly appointed. The equipment of the engineering laboratories affords to graduate students abundant and varied opportunity for cooperative industrial research. The normal requirement for one of the engineering degrees, C.E., M.E., E.E., E.M., or Met.E., is two years of graduate study and research in residence. The M.S. degree is awarded for advanced study in some particular portion of the engineering field which in itself is too limited to warrant an engineering degree.

Engineering Laboratories and Other Buildings

The Sheffield Scientific School buildings are with one exception located two blocks north of the New Haven "Green," the geographical and business center of the city. Most of the other university buildings lie in the several successive blocks to the southwest. The new university science laboratories are, however, two blocks north of the Scientific School, and a number of other university buildings are still further removed north and south.

The engineering laboratories of the Sheffield Scientific School are:

The Hammond Mining and Metallurgical Laboratory. This was built in 1905, and is situated several blocks northwest of the other laboratories. The building is about 84 by 200 feet. The laboratory equipment provides for teaching and investigation in the usual mining and metallurgical subjects. Special attention has of late years been devoted to metallography.

The Mason Laboratory of Mechanical Engineering. This is the largest of the engineering laboratories and was built in 1910. In its design are features which contribute to effectiveness in teaching and research. A ten ton crane operates for the entire length of the building. The main floor contains numerous small units of steam power plant equipment and a variety of internal combustion engines. The materials testing is done here. Extensive tests of heating apparatus and of automobiles are features of the work of this laboratory. On the second floor is an assortment of modern airplane engines.

The Dunham Laboratory of Electrical Engineering. This building, completed in 1913, represents a very modern type of fireproof construction. Flexibility and convenience in arrangement are its chief characteristics. The main laboratory has a floor area of 115 by 30 feet, with a ceiling height of 27 feet. A crane operates throughout the entire length of the room, and with a gallery on the level of the lecture room, provides ready means for transferring apparatus from the main laboratory to the lecture room for demonstration purposes. The laboratory equipment comprises a well selected group of transformers and dynamo machines-a splendid industrial control apparatus laboratory and a selection of modern relays and control apparatus for central station engineering. The top floors are equipped with communication engineering apparatus of all types, part of which belongs to the School and part to the United States Army.

Winchester Hall, erected in 1893, is devoted mainly to Civil Engineering and Engineering Drawing. In the basement is a cement testing laboratory.

Camp Sheffield, at East Lyme, Connecticut, 45 miles east of New Haven, is a tract of over 1,800 acres recently purchased for a summer surveying and engineering camp. The extreme length of the tract is three and one-half miles, and its extreme width two and one-half miles. Within its borders is a picturesque lake of considerable proportions. The tract is already being used to a limited extent, and de-

tailed plans for permanent buildings and development have been prepared.

Other buildings of particular interest to engineers are two large and comparatively new University laboratories, the Sloane Physics Laboratory and the Osborn Memorial Laboratories, both on Prospect Street, a short distance north of the Sheffield Scientific School.

University Organization

The entire University, including the undergraduate, graduate and professional schools, has recently been reorganized. The University Faculty is now divided into four divisions of related departments of study. Engineering comprises one of the divisions; the other three are the Division of Language, Literature and the Arts, the Division of History and the Social Sciences, and the Division of Mathematics and the Natural Sciences. Each division is represented on the University Council.

The Division of Engineering comprises the departments of

Civil Engineering
Mechanical Engineering
Electrical Engineering
Mining and Metallurgy
Engineering Mechanics
Engineering Drawing

There are two distinct undergraduate schools, with a Freshman year in common. Students who expect to study either in the Scientific School or in the College now spend their first year together under a separate dean and faculty and pursue a more or less common course of studies, as students in the "Freshman Year of Yale University." Beginning with Sophomore year students elect to enter either the College or the Scientific School.

Yale Engineering Association

This Association was organized in 1914, with headquarters in New York City. With its thousand members, all of whom are graduates of the University, it constitutes one of the largest of Yale's many alumni organizations. The Association aims to advance the interests of Engineering at Yale and to promote the better acquaintance and fellowship of Yale engineers. There are several standing committees, of which the most active are the Consultation Committee, the Curriculum Committee, and the Publicity Committee. An Employment Bureau co-operates with the Bureau of Appointments of the University in securing positions for Yale men. News Letters are issued by the Secretary of the Association at intervals during the year. The Association has been, by its work and influence, an important factor in the recent progress made by the departments of Engineering.

INFORMATION SERVICE

In order that those who arrive in New Haven by train may reach Convention Headquarters with the least trouble a special information service will be maintained at the railroad station during Tuesday and Wednesday, the first two days of the Convention.

An information service will be maintained at Headquarters throughout the Convention.

REGISTRATION

Those who attend the Convention should proceed to Headquarters immediately upon arrival in New Haven.

HEADQUARTERS

Headquarters will be in Dwight Hall (College Y. M. C. A. building) on the Yale Campus between Chapel Street and Elm Street, just across the street from the new Harkness Memorial Tower. The corner of High Street and Chapel Street and the corner of High Street and Elm Street are the nearest street car stops.

Street cars which run from the railroad station to the Campus via Chapel Street or Elm Street carry one of the following signs:

Railroad Station—Whalley Avenue
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ROOMS

At Headquarters rooms will be assigned in the new Memorial Quadrangle—the most beautiful group of buildings at Yale. Rates will be $1.50 per day per person.

It is earnestly requested that applications for rooms be made as far in advance of the Convention as possible. Please use the enclosed return post card for this purpose.

MEALS

Breakfasts may be obtained at various hotels and restaurants within a block of the Memorial Quadrangle at a cost of from 40 cents to $1.25.

Luncheons at the Lawn Club and the Country Club will cost from $1.50 to $1.75 per person.

The shore dinner will cost $2.50 per person, and the annual dinner, $3.00 per person.

TOTAL COST

The cost of meals from Tuesday evening until Friday night should not exceed $16 per person, including the annual dinner.

The cost of rooms for four nights will be $6, so that the total cost of meals and rooms for the Convention should not exceed $22 per person.

WHERE MEETINGS WILL BE HELD

Some of the meetings will be held in college buildings, others at the Lawn Club and at the Country Club—places both cool and quiet. Directions for reaching various meetings will be issued at Headquarters.

ENTERTAINMENT

Tuesday, June 28

Organ recital by Professor H. B. Jepson on the Newberry Memorial Organ, one of the notable organs of the world.

Wednesday, June 29

Automobile ride to Judge's Cave at the top of West Rock, to the Yale Bowl and along the shore of Long Island Sound to a resort where a shore dinner will be served.

Thursday, June 30

Outing at the New Haven Country Club on the shore of Lake Whitney. The annual dinner will be held at the Country Club in the evening.

Friday, July 1

An all-day excursion on Long Island Sound from New Haven to the Submarine Base at New London is planned. If the tentative plans can be carried out, this excursion will be of unique interest.

ENTERTAINMENT FOR LADIES

Additional entertainment will be provided for ladies during those sessions of the Convention which they do not desire to attend.

FINAL PROGRAM FOR THE TWENTY-NINTH ANNUAL MEETING

Society for the Promotion of Engineering Education

Yale University, June 28—July 1, 1921

TUESDAY, JUNE 28

(Daylight Saving Time)

11:30 A. M. Meeting of the Council, Graduates' Club.

12:30 P. M. Luncheon for the members of the Council, Graduates' Club.

2:00 P. M. Opening Session, Sprague Memorial Hall.
Address of Welcome, Russell H. Chittenden Director Sheffield Scientific School, Yale University.

2:20 P. M. Response, Mortimer E. Cooley, President of the Society.

2:25 P. M. Alumni Engineering Associations, Francis G. Pratt, Vice President General Electric Co., and President Yale Engineering Association.

2:40 P. M. College Education as Related to Industry, J. E. Otterson, President Winchester Repeating Arms Company.

2:55 P. M. Report of the Treasurer.

3:00 P. M. Report of the Secretary.

3:05 P. M. Report of Committee No. 22—Intelligence Tests, L. L. Thurstone, Chairman.

3:40 P. M. Report of Committee No. 14—Business Training, Morris Knowles, Chairman.

3:50 P. M. Report of Committee on Engineering Experiment Stations, Chas. S. Howe, Chairman.

3:55 P. M. Appointment of Committees on Resolutions and Nominations.

4:00 P. M. Seeing Yale. Trips about the University with guides.

5:30 P. M Organ Recital, H. B. Jepson, University Organist, Woolsey Hall.

8:00 P. M. Getting acquainted, Memorial Quadrangle and Headquarters.

WEDNESDAY, JUNE 29

9:00 A. M. Meeting of the Council, Byers Hall.

9:30 A. M. **Second Session: Topic, The Curriculum,** Mason Laboratory of Mechanical Engineering.
Address: Arthur Twining Hadley, President, Yale University.

9:45 A. M. Engineering at Yale—Recent Developments, John C. Tracy, Chairman of the Division of Engineering, Sheffield Scientific School.

9:55 A. M. Discussion.

10:10 A. M. General Studies in the Engineering Curriculum, W. H. Burr, Emeritus Professor of Civil Engineering, Columbia University.

10:25 A. M. Discussion.

10:40 A. M. The Problems of Training an Engineer in the Public Service, W. A. Bassett, Staff Engineer, New York Bureau of Municipal Research.

10:55 A. M. Discussion.

11:10 A. M. Engineering Teaching and Practice, W. F. M. Goss, President Railway Car Maufacturers'

11:25 A. M. Discussion.

11:40 A. M. Report of Committee No. 8—Admission, O. J. Ferguson, Chairman.

12:30 P. M. Luncheon, Lawn Club.

Third Session—Topic, The Student. New Haven Lawn Club. Association, New York City.

2:00 P. M. Mental Discipline versus Culture in College, Geo. F. Swain, Professor of Civil Engineering, Harvard Engineering School.

2:15 P. M. Discussion.

2:30 P. M. Student Government, P. H. Daggett, Professor of Electrical Engineering, University of North Carolina.

2:45 P. M. Discussion.

3:00 P. M. Some Results of the Co-operative System, J. W. Hallock, Director of Co-operative Work, University of Pittsburgh.

3:15 P. M. Discussion.

3:30 P. M. Report of Committee No. 10—Mathematics, L. C. Plant, Chairman.

3:45 P. M. Report of National Committee on Mathematical Requirements, J. W. Young, Chairman.

4:00 P. M. Discussion.

4:15 P. M. Auto ride to nearby points of interest.

6:30 P. M. Shore Dinner, followed by "Get Together" Meeting.

THURSDAY, JUNE 30

8:30 A. M. Meeting of Institutional Delegates, Byers Hall. Report of Committee No. 7—Institutional, T. U. Taylor, Chairman.

Fourth Session. Topic, The Faculty, Dunham Laboratory of Electrical Engineering.

9:30 A. M. Symposium on Training of Engineering Teachers—

(a) What is being done to improve the personnel of Engineering Teachers?

(b) What is being done to train teachers for their work?

10:30 A. M. Thoughts on Engineering Education, Rudolph Hering, Consulting Engineer, New York City.

10:45 A. M. Report of Committee No. 9—Administration, H. S. Evans, Chairman.

10:50 A. M. Report of Committee No. 17—Electrical Engineering, C. F. Harding, Chairman.

11:05 A. M. Report of Committee No. 19—Drawing, R. S. Kirby, Chairman.

11:15 A. M. Report of Committee No. 20—Standardization of Technical Nomenclature, J. T. Faig, Chairman.

11:25 A. M. Report of Committee on Resolutions.

11:30 A. M. Report of Committee on Nominations.
Election of Officers.

12:00 M. Cars to Country Club.

1:00 P. M. Buffet Luncheon, Country Club.

2:30 P. M. Round Table Discussion, L. P. Breckenridge, Professor of Mechanical Engineering, Sheffield Scientific School, presiding.

Foundation Mathematics, Physics and Chemistry for Engineering Students, Geo. B. Pegram, Dean, School of Engineering, Columbia University.

The Problem Method of Teaching.

SPEE Plans for the Coming Year.

Engineering Extension.

Co-operation with Commercial Associations, such as N. E. L. A.

7:00 P. M. Annual Dinner (Dress strictly informal), Country Club.

Address by Mortimer E. Cooley, President of the Society.

Address by Calvert Townley, Vice President The Federated American Engineering Societies.

Address by Hon. Edwin Denby, Secretary of the Navy.

FRIDAY, JULY 1

9:30 A. M. Boat Excursion, Long Island Sound.

LOCAL COMMITTEE

JOHN C. TRACY, Chairman

L. P. Breckenridge
G. P. Day
S. W. Dudley
F. B. Johnson
C. H. Mathewson
M. A. Osborn
C. F. Scott
C. J. Tilden

Reception and Registration

C. F. Scott, Chairman

C. T. Bishop
H. V. Bozell
C. S. Farnham
E. O. Waters
G. F. Wittig

Rooms and Meals

F. B. Johnson

Entertainments and Excursions

L. P. Breckenridge, Chairman

C. H. Mathewson
M. A. Osborn
I. T. Hook
H. L. Seward
G. A. Stetson
R. H. Suttie
H. M. Turner

Entertainment for Ladies

Mrs. J. C. Tracy, Chairman

Mrs. L. P. Breckenridge
Mrs. S. W. Dudley
Mrs. C. H. Mathewson
Mrs. C. F. Scott
Mrs. C. J. Tilden

Program

S. W. Dudley, Chairman

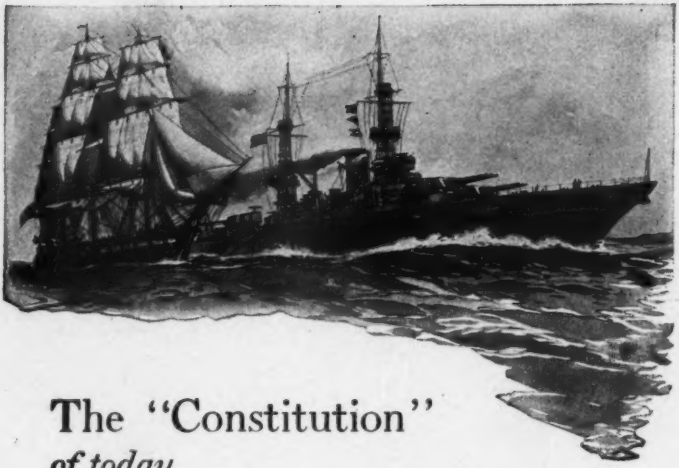
S. E. Barney
R. S. Kirby
P. G. Laurson
E. H. Lockwood
L. W. W. Morrow
Arthur Phillips
W. J. Wohlenberg

Address all mail to
Committee for the S. P. E. E. Convention
Room 120 Winchester Hall,
New Haven, Connecticut.

EXCURSION RATES

The Secretary has attempted to secure reduced rates for the annual meeting. New Haven is located in the New England Passenger Association territory and they do not grant rates. This precludes the possibility of any general reduced rates for the meeting. However, a number of railroads are offering reduced summer excursion rates to New England points. Inquiry should be made of your local ticket agent in regard to such rates.

Information booklets concerning New England such as Maine, Berkshire, Cape Cod, Plymouth, etc., can be obtained by addressing the General Passenger Agent, N. Y., N. H. & Hartford R. R. at New Haven, Conn.



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The Bulletin of the Society for the Promotion of Engineering Education

PUBLICATION COMMITTEE

John F. Hayford, Milo S. Ketchum, F. L. Bishop

The Bulletin is the official organ of the Society. It is published monthly from September to June. It contains not only the text of papers presented before the Society, but also college notes, short contributions from members, and matters of general interest to all persons connected directly or indirectly with technical education.

The Society comprises about fifteen hundred teachers, engineers and other persons interested in technical education and a considerable number of educational institutions.

Subscription Price

The membership fee includes one subscription to the Bulletin. To non-members and libraries, the price of the Bulletin is $2.00 per year. Libraries may subscribe for the Bulletin and Proceedings for $4.00 per year.

Communications regarding subscriptions, advertising and editorial matter should be addressed to **The Bulletin of the Society for the Promotion of Engineering Education, 41 North Queen Street, Lancaster, Pa., or to the Editor, Dean F. L. Bishop, University of Pittsburgh, Pittsburgh, Pa.** Remittances should be drawn to the order of **Mr. W. O. WILEY, Treasurer, 432 Fourth Avenue, New York.**

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